CLAIMS

WHAT IS CLAIMED:

1. A device, comprising:

delay lock loop to provide an output signal based upon a phase difference between a reference signal and a feedback signal, said delay lock loop comprising a delay circuit for switching an activation of a capacitive delay.

2. The device of claim 1, wherein said device is a memory device.

3. The device of claim 2, wherein said memory device is at least one of a static random access memory (SRAM), a dynamic random access memory (DRAM), a double-data rate SDRAM (DDR SDRAM), a DDR I device, a DDR II device, a Rambus DRAM (RDRAM), and a FLASH memory.

4. The device of claim 1, wherein said delay lock loop further comprises:

a coarse delay unit to provide said coarse delay upon at least one of said reference signal and a data output signal;

a fine delay unit to provide a fine tuned delay upon at least one of said reference signal and said data output signal;

a phase detector to recognize said phase difference; and

a feedback delay unit to provide a delay upon said output signal to generate said feedback signal.

5. The device of claim 4, wherein said fine delay unit comprises:

a first inverter to invert an input signal;

an N-channel transistor set comprising a first and a second N-channel transistor, wherein a source terminal of said first N-channel transistor is coupled to a source terminal of said second N-channel transistor and a drain terminal of said first N-channel transistor is coupled to a drain terminal of said second N-channel transistor;

an P-channel transistor set comprising a first and a second P-channel transistor, wherein a source terminal of said first P-channel transistor is coupled to a source terminal of said second P-channel transistor and a drain terminal of said first P-channel transistor is coupled to a drain terminal of said second P-channel transistor; and

a second inverter to provide a complementary control signal for said P-channel transistor set.

6. The device of claim 5, wherein activation of at least one of said P-channel and said N-channel transistor sets provides a switching on of a capacitive delay upon said input delay to provide a delayed output signal.

7. The device of claim 5, wherein de-activation of at least one of said P-channel and said N-channel transistor sets provides a switching off of a capacitive delay upon said input delay to provide an output signal with less delay.

8. The device of claim 5, further comprising a plurality of N-channel transistor sets and P-channel transistor sets to provide additional delays upon said input signal to provide a delayed output signal.

9. The device of claim 1, wherein said output signal comprises said coarse delay and said fine delay.

10. The device of claim 1, wherein said reference signal is a clock signal.

11. A delay lock loop to provide an output signal based upon a phase difference between a reference signal and a feedback signal, comprising:

a coarse delay unit to provide said coarse delay upon at least one of said reference signal and a data output signal;

a fine delay unit for switching an activation of a capacitive delay to provide a fine tuned delay upon at least one of said reference signal and said data output signal;

a phase detector to recognize said phase difference; and

a feedback delay unit to provide a delay upon said output signal to generate said feedback signal.

12. The delay lock loop of claim 11, wherein said fine delay unit comprises:

a first inverter to invert an input signal;

an N-channel transistor set comprising a first and a second N-channel transistor, wherein a source terminal of said first N-channel transistor is coupled to a

source terminal of said second N-channel transistor and a drain terminal of said first N-channel transistor is coupled to a drain terminal of said second N-channel transistor;

an P-channel transistor set comprising a first and a second P-channel transistor, wherein a source terminal of said first P-channel transistor is coupled to a source terminal of said second P-channel transistor and a drain terminal of said first P-channel transistor is coupled to a drain terminal of said second P-channel transistor; and

a second inverter to provide a complementary control signal for said P-channel transistor set.

13. The delay lock loop of claim 12, wherein activation of at least one of said P-channel and said N-channel transistor sets provides a switching on of a capacitive delay upon said input delay to provide a delayed output signal.

14. The delay lock loop of claim 12, wherein de-activation of at least one of said P-channel and said N-channel transistor sets provides a switching off of a capacitive delay upon said input delay to provide an output signal with less delay.

15. The delay lock loop of claim 12, further comprising a plurality of N-channel transistor sets and P-channel transistor sets to provide additional delays upon said input signal to provide a delayed output signal.

16. The delay lock loop of claim 11, wherein said output signal comprises said coarse delay and said fine delay.

17. The delay lock loop of claim 16, wherein said reference signal is a clock signal.

18. A circuit to provide an output signal based upon a phase difference between a reference signal and a feedback signal, comprising:

a coarse delay unit to provide said coarse delay upon at least one of said reference signal and a data output signal;

a fine delay unit for switching an activation of a capacitive delay to provide a fine tuned delay upon at least one of said reference signal and said data output signal;

a phase detector to recognize said phase difference; and

a feedback delay unit to provide a delay upon said output signal to generate said feedback signal.

19. The circuit of claim 18, wherein said fine delay unit comprises:

a first inverter to invert an input signal;

an N-channel transistor set comprising a first and a second N-channel transistor, wherein a source terminal of said first N-channel transistor is coupled to a source terminal of said second N-channel transistor and a drain terminal of said first N-channel transistor is coupled to a drain terminal of said second N-channel transistor;

an P-channel transistor set comprising a first and a second P-channel transistor, wherein a source terminal of said first P-channel transistor is coupled to a source terminal of said second P-channel transistor and a drain terminal of said first P-channel transistor is coupled to a drain terminal of said second P-channel transistor; and

a second inverter to provide a complementary control signal for said P-channel transistor set.

20. The circuit of claim 19, wherein activation of at least one of said P-channel and said N-channel transistor sets provides a switching on of a capacitive delay upon said input delay to provide a delayed output signal.

21. The circuit of claim 19, wherein de-activation of at least one of said P-channel and said N-channel transistor sets provides a switching off of a capacitive delay upon said input delay to provide an output signal with less delay.

22. The circuit of claim 19, further comprising a plurality of N-channel transistor sets and P-channel transistor sets to provide additional delays upon said input signal to provide a delayed output signal.

23. The circuit of claim 18, wherein said output signal comprises said coarse delay and said fine delay.

24. The circuit of claim 23, wherein said reference signal is a clock signal.

25. A system board, comprising:

a first device comprising a memory location for storing data and a delay lock loop to provide an output signal based upon a phase difference between a reference signal and a feedback signal, said delay lock loop comprising a delay circuit for switching an activation of a capacitive delay; and

a second device operatively coupled to said first device, said second device to access data from said first device based upon an operation performed by said delay lock loop.

26. The system board described in claim 25, wherein said memory location is at least one of an SRAM, a DRAM, a DDR SDRAM, a DDR I device, a DDR II device, a RDRAM, and a FLASH memory.

27. The system board of claim 25, wherein said system board is a motherboard of a computer system.

28. The system board of claim 25, wherein said delay lock loop further comprises:

a coarse delay unit to provide said coarse delay upon at least one of said reference signal and a data output signal;

a fine delay unit to provide a fine tuned delay upon at least one of said reference signal and said data output signal;

a phase detector to recognize said phase difference; and

a feedback delay unit to provide a delay upon said output signal to generate said feedback signal.

29. The system board of claim 28, wherein said fine delay unit comprises:

a first inverter to invert an input signal;

an N-channel transistor set comprising a first and a second N-channel transistor, wherein a source terminal of said first N-channel transistor is coupled to a source terminal of said second N-channel transistor and a drain terminal of said first N-channel transistor is coupled to a drain terminal of said second N-channel transistor;

an P-channel transistor set comprising a first and a second P-channel transistor, wherein a source terminal of said first P-channel transistor is coupled to a source terminal of said second P-channel transistor and a drain terminal of said first P-channel transistor is coupled to a drain terminal of said second P-channel transistor; and

a second inverter to provide a complementary control signal for said P-channel transistor set.

30. The system board of claim 29, wherein activation of at least one of said P-channel and said N-channel transistor sets provides a switching on of a capacitive delay upon said input delay to provide a delayed output signal.

31. The system board of claim 29, wherein de-activation of at least one of said P-channel and said N-channel transistor sets provides a switching off of a capacitive delay upon said input delay to provide an output signal with less delay.

32. The system board of claim 29, further comprising a plurality of N-channel transistor sets and P-channel transistor sets to provide additional delays upon said input signal to provide a delayed output signal.

33. The system board of claim 25, wherein said output signal comprises said coarse delay and said fine delay.

34. The device of claim 25, wherein said reference signal is a clock signal.

35. A memory device, comprising:

delay lock loop to provide an output signal based upon a phase difference between a reference signal and a feedback signal, said delay lock loop comprising a delay circuit for switching an activation of a capacitive delay.

36. The memory device of claim 35, wherein said memory device is at least one of a static random access memory (SRAM), a dynamic random access memory (DRAM), a double-data rate SDRAM (DDR SDRAM), a DDR I device, a DDR II device, a Rambus DRAM (RDRAM), and a FLASH memory.

37. The memory device of claim 35, wherein said delay lock loop further comprises:

a coarse delay unit to provide said coarse delay upon at least one of said reference signal and a data output signal;

a fine delay unit to provide a fine tuned delay upon at least one of said reference signal and said data output signal;

a phase detector to recognize said phase difference; and

a feedback delay unit to provide a delay upon said output signal to generate said feedback signal.

38. The memory device of claim 37, wherein said fine delay unit comprises at least one delay block, said delay block to provide a delay upon at least one of said reference signal and said data output signal.

39. The memory device of claim 38, wherein said delay block comprises:

a first inverter to invert an input signal;

an N-channel transistor set comprising a first and a second N-channel transistor, wherein a source terminal of said first N-channel transistor is coupled to a source terminal of said second N-channel transistor and a drain terminal of said first N-channel transistor is coupled to a drain terminal of said second N-channel transistor;

an P-channel transistor set comprising a first and a second P-channel transistor, wherein a source terminal of said first P-channel transistor is coupled to a source terminal of said second P-channel transistor and a drain terminal of said

first P-channel transistor is coupled to a drain terminal of said second P-channel transistor; and

a second inverter to provide a complementary control signal for said P-channel transistor set.

40. The memory device of claim 39, wherein activation of at least one of said P-channel and said N-channel transistor sets provides a switching on of a capacitive delay upon said input delay to provide a delayed output signal.

41. The memory device of claim 39, wherein de-activation of at least one of said P-channel and said N-channel transistor sets provides a switching off of a capacitive delay upon said input delay to provide an output signal with less delay.

42. The memory device of claim 39, further comprising a plurality of N-channel transistor sets and P-channel transistor sets to provide additional delays upon said input signal to provide a delayed output signal.

43. The memory device of claim 35, wherein said output signal comprises said coarse delay and said fine delay.

44. The device of claim 43, wherein said reference signal is a clock signal.

45. A method, comprising:

providing at least one of a coarse delay and a fine delay upon a reference signal based upon a phase shift between said reference signal and a feedback signal, providing said fine delay comprising switching on a capacitive delay; and

generating a synchronized output signal based upon said coarse delay and said fine delay.

46. The method of claim 45, wherein providing said fine delay comprises:

activating an N-channel transistor set comprising a first and a second N-channel transistor, wherein a source terminal of said first N-channel transistor is coupled to a source terminal of said second N-channel transistor and a drain terminal of said first N-channel transistor is coupled to a drain terminal of said second N-channel transistor;

activating a P-channel transistor set comprising a first and a second P-channel transistor, wherein a source terminal of said first P-channel transistor is coupled to a source terminal of said second P-channel transistor and a drain terminal of said first P-channel transistor is coupled to a drain terminal of said second P-channel transistor; and

providing a second inverter to provide a complementary control signal for said P-channel transistor set.

47. The method of claim 46, wherein activating at least one of said P-channel and said N-channel transistor sets provides a switching on of a capacitive delay upon said input delay to provide a delayed output signal.

48. The method of claim 46, wherein de-activating at least one of said P-channel and said N-channel transistor sets provides a switching off of a capacitive delay upon said input delay to provide an output signal with less delay.

49. An apparatus, comprising:

means for providing at least one of a coarse delay and a fine delay upon a reference signal based upon a phase shift between said reference signal and a feedback signal, providing said fine delay comprising switching on capacitive delay; and

means for generating a synchronized output signal based upon said coarse delay and said fine delay.